National Marine Fisheries Service (NMFS)
Application Instructions for a Permit for Scientific Purposes
or to Enhance the Propagation or Survival of Threatened and Endangered Species

OMB control number: 0648-0402 Expiration date: 02/28/2009

A. **Title**:
Application for Permit for Scientific Purposes under the Endangered Species Act of 1973.

Project Name:
Effectiveness of stream enhancement projects on Thornton, Piper's and Venema Creeks, Seattle, Wa.

B. **Species**:
Puget Sound Chinook salmon
Puget Sound Steelhead

C. **Date of Permit Application**:
2/09/2007

D. **Applicant Identity**:

1. Tracy Leavy Fish Biologist
2. US Fish and Wildlife Service
3. 510 Desmond Drive Ste 102, Lacey, WA 98503.
4. (360) 753-4064
5. (360) 753-9407
6. tracy_leavy@fws.gov

E. **Information on Personnel, Cooperators, and Sponsors**: If the same person or entity will hold several roles, you may state their address information once and refer back to it.

1. **Principal Investigators:**
Roger Peters roger_peters@fws.gov. (360) 753-9549.
Phil Roni phil.roni@noaa.gov (206) 860-3307.

Field Supervisors:
Roger Peters see above
Paul Bakke paul_bakke@fws.gov. (360) 753-5836.
Phil Roni see above
Sarah Morley sarah.morley@noaa.gov (206) 860-6780.
Tracy Leavy- see above.

2. **Field Personnel**:
Steve Damm
Dan Lantz
Howard Gearns
Scott Sanders
Carrie Cook-Tabor
Holly Coe
Todd Bennett
Kris Kloehn

3. **Cooperators/Sponsors**
City of Seattle- Seattle Public Utilities
Contact:
Keith Kurko Keith.Kurko@Seattle.Gov (206) 233-1516

4. The proposed activities will be conducted by field personnel, principal investigators, and field supervisors listed above.

5. PS Chinook salmon will be immediately returned to their capture site (see section H.2.).

F. **Project Description, Purpose, and Significance**: Describe the purpose of your study or project. If available, attach a copy of the formal project proposal or contract, including the contract number, to your application. You may reference the appropriate section of the proposal/contract in response to a particular question.

1. The purpose of this study is to provide information to Seattle Public Utilities on biological and ecological benefits related to Natural Drainage System (Venema and Pipers Creeks) and Habitat Complexity/Flood Plain Reconnection (Thornton Creek) projects (e.g., benefit to fish, insects and other biota as well as physical and chemical processes supporting habitat development, See attached proposal).

2. The proposed project does not respond directly or indirectly to any recommendation or requirement of a Federal agency. The restoration projects did not include effectiveness monitoring as a requirement of consultation with NMFS and CORPS. This project involves several government agencies, NMFS, USFWS, and SPU. PS Chinook, coho, and adfluvial cutthroat trout have been observed utilizing two of the reaches on Thornton Creek. Six of the nineteen Chinook redds observed in all of Thornton Creek since 2000 have been identified in these reaches, indicating it is a preferred spawning area. The addition of large wood and floodplain reconnectivity may increase the abundance of listed species by improving the quality of spawning and rearing habitat and reducing redd scouring by mitigating high storm flows.

3. The purpose of this research is to document the overall effectiveness of restoration projects on aquatic biota in urban streams. One expectation of the study is that by increasing the

quality and quantity of rearing and spawning habitat, an increase in species diversity and abundance of juvenile salmonids will occur over time. Another goal of this project is to document which types of restoration projects are more beneficial in mitigating the effects of urbanization. This information may be used in the future to guide resource managers in prioritizing restoration projects.

4. N/A

5. The purpose of this research is to document the overall effectiveness of restoration projects on aquatic biota in urban streams. One expectation of the study is that by increasing the quality and quantity of rearing and spawning habitat, an increase in species diversity and abundance of juvenile salmonids will occur over time. Another goal of this project is to document which types of restoration projects are more beneficial in mitigating the effects of urbanization. This information may be used in the future to guide resource managers in prioritizing restoration projects. This research will benefit listed species by documenting changes in abundance in the reaches over time which may have resulted from habitat enhancement.

G. **Project Methodology**: Provide a detailed description of the project, or program, in which the listed species is to be used, including:

1. This project is scheduled to last 5-7 years and began in August 2005. Biological sampling will occur during the dry season (fish, invertebrates, and periphyton) in July through early September 2007. See Appendix A- Monitoring Physical and Biological Response to SPU Creek Improvement Actions.

2. Method(s) of capture and of release;

a. All fish will be sampled using a Smith-Root LR-24© backpack electrofisher. Abundance estimates will be obtained using the standard three pass depletion method. Stunned fish will be collected with dip nets and placed in aerated recovery bins, separated by habitat type and pass. Non listed species will be anesthetized with tricaine methanesulfonate (MS-222), identified to species, weighted (0.1 g), measured (1.0 mm), and held in aerated containers until the sampling is completed. Listed species will be enumerated and immediately placed in aerated containers until the survey is completed. Upon completion of the survey all fish will be released back into the habitat from which they were removed. A sub-sample of unidentifiable non salmonid species will be sacrificed and brought back to the laboratory for taxonomic identification. See Appendix A for further details.

b. Sampling on Thornton, Piper's, and Venema Creeks will occur between July and September 2007 and between March and April 2008.

c. N/A

d. Listed fish will be enumerated and placed in aerated bins until completion of the survey. After the survey is completed they will be released in the habitat from which they were captured.

e. Listed fish will be temporarily held in aerated bins. The plastic bins will be placed in the stream in a shaded area. Each bin, 2 ft x 1.5 ft x 1.5ft, has numerous holes along all sides to allow fresh stream water to circulate inside the bin. In addition, aerators will be placed inside the bins. Listed fish will be held for the duration of the survey, approximately 3-4 hours. The condition of the fish and temperature within the bins will be monitored frequently, approximately every 30 minutes, to ensure survival. All fish that exhibit stress will be immediately released or revived. Predation within the bins will be prevented by separating fish by similar size classes.

f. Listed fish will be enumerated and released.

3. N/A

4. Fish reactions to electroshocking are unpredictable. Behavioral responses include escape, jumping, immobility, movement toward the anode, and no obvious effect. In addition electroshocking may cause trauma or stress to the fish. We will follow NMFS electrofishing guidelines for listed species (2000) in order to reduce the risk of injury or mortality to juvenile PS Chinook salmon and steelhead. Thornton, Piper's, and Venema Creeks do not support a large run of spawning PS Chinook salmon or PS steelhead (McMillan 2006). Peak out migration from Thornton Creek occurs by June (Joe Starstead SPU 2007). By sampling in late July through early September 2007, we hope to avoid encounters with juvenile or hatchery PS Chinook salmon and PS steelhead. However, there is a risk of encountering adult spawning salmon during this time period. Prior to each survey, all reaches will be examined for the presence of adult spawning PS Chinook salmon. If observed or encountered while electrofishing the survey will immediately be terminated.

H. **Description and Estimates of Take**:

1. Thornton, Piper's, and Venema Creeks are all included within the reported range of PS Chinook salmon and PS steelhead. However, PS Chinook salmon redds and smolts have not been observed or captured in Piper's and Venema Creeks since surveys began in March 2001 (McMillan 2006; Joe Starstead SPU, pers. comm.). Thornton Creek does not support a large run of either species and juvenile abundance is low. McMillan (2006) reported one confirmed steelhead sighting on Thornton Creek from March of 2001 – 2006, a 26" female carcass found in 2004. He also reported that 3 – 4 other possible live sightings may have occurred but were most likely adfluvial rainbow trout from Lake Washington based on their sizes, (18 – 23 "). Between

2000 and 2005, nineteen PS Chinook salmon redds have been identified in Thornton Creek. To date, one PS Chinook redd has been observed by McMillan in one of our study reaches in fall of 2006. An intensive electrofishing survey was performed by USFWS personnel in summer of 2005 and summer 2006 to document species presence/absence in Seattle's urban creeks (Lantz and Tabor in prep). No juvenile PS steelhead or PS Chinook salmon were captured in Thornton, Piper's, or Venema Creeks over the course of this survey. In Piper's and Venema Creeks, McMillan (2006) observed between 3 – 4 possible inactive steelhead redds from March 2001 – 2006. Roni reported capture of one rainbow/steelhead juvenile trout in summer 2006 electroshocking surveys.

2. Salmonid species will not be sacrificed intentionally for taxonomic identification. Potential mortality rates are based on those that occurred in salmonids species from last year's sampling (1%).

3. Take estimates were derived based on previous electrofishing surveys conducted on these creeks by USFWS personnel. Mortality estimates are based on unintentional mortality rates which occurred in last year's survey for salmonid species.

4. USFWS listed species would not be affected by this study.

I. Transportation and Holding

1. Transportation of a Listed Species:

a. N/A
b. N/A
c. N/A
d. N/A
e. N/A
f. N/A

2. Holding of a Listed Species:

a. Listed fish will be temporarily held in aerated bins. The plastic bins will be placed in the stream in a shaded area. Each bin, 2 ft x 1.5 ft x 1.5 ft, has numerous holes along all sides to allow fresh stream water to circulate inside the bin. In addition, aerators will be placed inside the bins. Listed fish will be held for the duration of the survey, approximately 3-4 hours. The condition of the fish and temperature within the bins will be monitored frequently, approximately every 30 minutes, to ensure survival. All fish that exhibit stress will be immediately released or revived. Predation within the bins will be prevented by separating fish by similar size classes.

b. See 2.a.
c. N/A
d. N/A

3. **Emergency contingencies:**
N/A

J. **Cooperative Breeding Program:**
I am willing to participate in a cooperative breeding program and to maintain or contribute data to a breeding program, if such action is requested.

K. **Previous or Concurrent Activities Involving Listed Species**:

1. This study was previously under the authority of permit # 1315 (study 8) held by Frederick A. Goetz.

2. a. PS Chinook salmon
Juvenile, naturally and hatchery produced with clipped adipose fin.
b. 0 mortalities.
c. N/A

L. **Certification**: You must include the following paragraph, exactly as worded, followed by the applicant or responsible party's signature, name, position title, and date:

"I hereby certify that the foregoing information is complete, true and correct to the best of my knowledge and belief. I understand this information is submitted for the purpose of obtaining a permit under the Endangered Species Act of 1973 (ESA) and regulations promulgated thereunder, and that any false statement may subject me to the criminal penalties of 18 U.S.C. 1001, or to penalties under the ESA."

_____ _____
Signature Date

_____
Name and Position Title (print)

Attach résumés here or submit it/them as a separate document.

Anticipated Annual Take

Use this table to specify anticipated types and numerical estimates of annual take for listed species during individual research or enhancement activities. Use a separate table for each discrete project or location **and label tables accordingly**. Each row must be explained in the application. All mortalities must be justified.

Location/Project: Urban Stream Restoration

ESU/ Species and population group if appropriate	Life Stage	Origin	Take Activity	Number of Fish Requested	Requested Unintentional Mortality	Research Location	Research Period
PS Chinook Salmon	Juvenile	Natural	Capture, handle, release	25	1/25	Thornton, Piper's, Venema Creeks, Seattle, WA	July-September 2007
PS Steelhead	Juvenile	Natural	Capture, handle, release	25	1/25	Thornton, Piper's, Venema Creeks, Seattle, WA	July-September 2007
PS Chinook Salmon	Juvenile	Listed Hatchery Clipped Adipose	Capture, handle, release	25	1/25	Thornton, Creek, Seattle, WA	July-September 2007
PS Steelhead	Juvenile	Natural	Capture, handle, release	25	1/25	Piper's, Venema Creeks, Seattle, WA	March-April 2008
PS Chinook Salmon	Juvenile	Natural	Capture, handle, release	25	1/25	Piper's, Venema Creeks, Seattle, WA	March-April 2008

Reference List

McMillan, B. 2006. Spring Spawning Surveys of Thornton and Piper's Creeks. Final Report to Seattle Public Utilities. 36 pp.